Release notes for ENDF/B Development photoat-047_Ag_000 evaluation

October 13, 2016

- `checkr` Warnings:

  1. A previous error halted parsing of the current section
     MAT=4700, MF= 1, MT=451 (1): Parsing stopped

     ```
     ERROR(S) FOUND IN MAT=4700, MF= 1, MT=451
         SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER     158 TO     185
     ```

- `checkr` Errors:

  1. A variable is outside the allowed ENDF range
     MAT=4700, MF= 1, MT=451 (0): Variable range

     ```
     ERROR(S) FOUND IN MAT=4700, MF= 1, MT=451
         MOD =    3 OUT OF RANGE    0 -    1            RECORD NUMBER     158
     ```

  2. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4700, MF=23, MT=501 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4700, MF=23, MT=501
         SECTION 23/501 NOT IN DIRECTORY              RECORD NUMBER     187
     ```

  3. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4700, MF=23, MT=502 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4700, MF=23, MT=502
         SECTION 23/502 NOT IN DIRECTORY              RECORD NUMBER    1013
     ```

  4. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4700, MF=23, MT=504 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4700, MF=23, MT=504
         SECTION 23/504 NOT IN DIRECTORY              RECORD NUMBER    1375
     ```

  5. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4700, MF=23, MT=515 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4700, MF=23, MT=515
         SECTION 23/515 NOT IN DIRECTORY              RECORD NUMBER    1416
     ```

  6. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4700, MF=23, MT=516 (0): Directory (b)

     ```
     ERROR(S) FOUND IN MAT=4700, MF=23, MT=516
         SECTION 23/516 NOT IN DIRECTORY              RECORD NUMBER    1450
     ```

  7. Missing a section in directory so your directory is messed up. This error will break everything else
     MAT=4700, MF=23, MT=517 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=517
          SECTION 23/517 NOT IN DIRECTORY                    RECORD NUMBER    1503
```

8. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=4700, MF=23, MT=522 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=522
          SECTION 23/522 NOT IN DIRECTORY                    RECORD NUMBER    1543
```

9. Missing a section in directory so your directory is messed up. This error will break everything else
   MAT=4700, MF=23, MT=534 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=534
          SECTION 23/534 NOT IN DIRECTORY                    RECORD NUMBER    1946
```

10. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=535 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=535
          SECTION 23/535 NOT IN DIRECTORY                    RECORD NUMBER    1968
```

11. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=536 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=536
          SECTION 23/536 NOT IN DIRECTORY                    RECORD NUMBER    1994
```

12. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=537 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=537
          SECTION 23/537 NOT IN DIRECTORY                    RECORD NUMBER    2021
```

13. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=538 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=538
          SECTION 23/538 NOT IN DIRECTORY                    RECORD NUMBER    2049
```

14. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=539 (0): Directory (b)

```
      ERROR(S) FOUND IN MAT=4700, MF=23, MT=539
          SECTION 23/539 NOT IN DIRECTORY                    RECORD NUMBER    2078
```

15. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=540 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=540
        SECTION 23/540 NOT IN DIRECTORY                    RECORD NUMBER    2118
```

16. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=541 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=541
        SECTION 23/541 NOT IN DIRECTORY                    RECORD NUMBER    2159
```

17. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=542 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=542
        SECTION 23/542 NOT IN DIRECTORY                    RECORD NUMBER    2212
```

18. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=543 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=543
        SECTION 23/543 NOT IN DIRECTORY                    RECORD NUMBER    2265
```

19. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=544 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=544
        SECTION 23/544 NOT IN DIRECTORY                    RECORD NUMBER    2300
```

20. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=545 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=545
        SECTION 23/545 NOT IN DIRECTORY                    RECORD NUMBER    2346
```

21. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=546 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=546
        SECTION 23/546 NOT IN DIRECTORY                    RECORD NUMBER    2392
```

22. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=547 (0): Directory (b)

```
    ERROR(S) FOUND IN MAT=4700, MF=23, MT=547
        SECTION 23/547 NOT IN DIRECTORY                    RECORD NUMBER    2461
```

23. Missing a section in directory so your directory is messed up. This error will break everything else
    MAT=4700, MF=23, MT=550 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4700, MF=23, MT=550
           SECTION 23/550 NOT IN DIRECTORY                    RECORD NUMBER     2531
```

24. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=4700, MF=27, MT=502 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4700, MF=27, MT=502
           SECTION 27/502 NOT IN DIRECTORY                    RECORD NUMBER     2589
```

25. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=4700, MF=27, MT=504 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4700, MF=27, MT=504
           SECTION 27/504 NOT IN DIRECTORY                    RECORD NUMBER     2642
```

26. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=4700, MF=27, MT=505 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4700, MF=27, MT=505
           SECTION 27/505 NOT IN DIRECTORY                    RECORD NUMBER     2696
```

27. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=4700, MF=27, MT=506 (0): Directory (b)

```
        ERROR(S) FOUND IN MAT=4700, MF=27, MT=506
           SECTION 27/506 NOT IN DIRECTORY                    RECORD NUMBER     2839
```

- `fudge-4.0` Warnings:

  1. generic warning message
  reaction label 0: Ag + gamma [coherent] / Product: gamma (Error # 0): Warning

  ```
  WARNING: coherentScattering is not a valid distribution component for 2-body reaction
  ```

  2. FIXME: Generic fudge unimplemented message
  reaction label 0: Ag + gamma [coherent] / Product: gamma (Error # 2): Generic unimp (c)

  ```
  WARNING: Checking not yet implemented for pointwise type data
  ```

  3. generic warning message
  reaction label 1: Ag + gamma [incoherent] / Product: gamma (Error # 0): Warning

  ```
  WARNING: incoherentScattering is not a valid distribution component for 2-body reaction
  ```

  4. FIXME: Generic fudge unimplemented message
  reaction label 1: Ag + gamma [incoherent] / Product: gamma (Error # 2): Generic unimp (c)

  ```
  WARNING: Checking not yet implemented for piecewise type data
  ```

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5. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 19: total (Error # 0): Sumrule

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 100.00%
```

6. Cross sections do not correctly sum up properly according to an ENDF (or equivalent) sumrule
summedReaction label 21: photoelectric absorption (Error # 0): Sumrule

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 97.79%
```

- `fudge-4.0` Errors:

  1. Calculated and tabulated thresholds don't agree
  reaction label 0: Ag + gamma [coherent] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
  ```

  2. 2-body reaction not in center-of-mass frame
  reaction label 0: Ag + gamma [coherent] / Product: gamma (Error # 1): 2-body not in COM

  ```
  WARNING: 2-body reaction not in center-of-mass frame!
  ```

  3. Calculated and tabulated thresholds don't agree
  reaction label 1: Ag + gamma [incoherent] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
  ```

  4. 2-body reaction not in center-of-mass frame
  reaction label 1: Ag + gamma [incoherent] / Product: gamma (Error # 1): 2-body not in COM

  ```
  WARNING: 2-body reaction not in center-of-mass frame!
  ```

  5. Energy range of data set does not match cross section range
  reaction label 1: Ag + gamma [incoherent] / Product: gamma / Distribution incoherentScattering - piecewise: (Error # 0): Domain mismatch (a)

  ```
  WARNING: Domain doesn't match the cross section domain: (0.0 -> 1000000000.0) vs (1.0 -> 1e+11)
  ```

  6. Calculated and tabulated thresholds don't agree
  reaction label 2: e- + e+ + Ag [electron field] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2.044e6 eV!
  ```

  7. Calculated and tabulated thresholds don't agree
  reaction label 3: e- + e+ + Ag [nuclear field] / Cross section: (Error # 0): Threshold mismatch

  ```
  WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
  ```

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8. Calculated and tabulated thresholds don't agree
   reaction label 4: e- + Ag1s1/2 / Cross section: (Error # 0): Threshold mismatch

   `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 25489. eV!`

9. Calculated and tabulated thresholds don't agree
   reaction label 5: e- + Ag2s1/2 / Cross section: (Error # 0): Threshold mismatch

   `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3783.4 eV!`

10. Calculated and tabulated thresholds don't agree
    reaction label 6: e- + Ag2p1/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3528.1 eV!`

11. Calculated and tabulated thresholds don't agree
    reaction label 7: e- + Ag2p3/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3350. eV!`

12. Calculated and tabulated thresholds don't agree
    reaction label 8: e- + Ag3s1/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 703.8 eV!`

13. Calculated and tabulated thresholds don't agree
    reaction label 9: e- + Ag3p1/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 600.1900000000001 eV!`

14. Calculated and tabulated thresholds don't agree
    reaction label 10: e- + Ag3p3/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 568.53 eV!`

15. Calculated and tabulated thresholds don't agree
    reaction label 11: e- + Ag3d3/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 382.99 eV!`

16. Calculated and tabulated thresholds don't agree
    reaction label 12: e- + Ag3d5/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 376.55 eV!`

17. Calculated and tabulated thresholds don't agree
    reaction label 13: e- + Ag4s1/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 101.61 eV!`

18. Calculated and tabulated thresholds don't agree
    reaction label 14: e- + Ag4p1/2 / Cross section: (Error # 0): Threshold mismatch

    `WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 68.41 eV!`

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19. Calculated and tabulated thresholds don't agree
    reaction label 15: e- + Ag4p3/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 63.14 eV!
    ```

20. Calculated and tabulated thresholds don't agree
    reaction label 16: e- + Ag4d3/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 12.47 eV!
    ```

21. Calculated and tabulated thresholds don't agree
    reaction label 17: e- + Ag4d5/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 11.86 eV!
    ```

22. Calculated and tabulated thresholds don't agree
    reaction label 18: e- + Ag5s1/2 / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6.89 eV!
    ```

23. Calculated and tabulated thresholds don't agree
    summedReaction label 19: total / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!
    ```

24. Calculated and tabulated thresholds don't agree
    summedReaction label 20: pair product / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
    ```

25. Calculated and tabulated thresholds don't agree
    summedReaction label 21: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch

    ```
    WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 6.89 eV!
    ```

- `xsectplotter` Warnings:

    1. Encountered runtime warning in xsectplotter or Fudge or matplotlib
       Error: RuntimeWarning

       ```
       stderr while processing crossSection

       /usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib/pyplot.py:412: Runtime
       ... [3 more lines]
       ```

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